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EXAMINER	
SHIN, MARC L	

ART UNIT	PAPER NUMBER
2836	

DATE MAILED: 01/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/072,755	ZECCA ET AL	
	Examiner	Art Unit	
	Marc L Shin	2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 July 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-53* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-53* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-14, 17-21, 23, 29-34, 37, 41-46, 49 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Shaklee et al (3,952,209) in view of Smith et al (4,652,769).

Regarding claims 1,29,41, Shaklee et al discloses an electric power distribution system for automotive vehicles that employs a bus bar which is electrically connected between a power supply and a plurality of power controllers for the powering of power-consuming devices (see col 2, lines 10-31). Shaklee et al further discloses a battery B which supplies power to the bus bar, and a plurality of electrical load devices (L1-L4) disposed in different parts of the vehicle (see col 2, lines 50-57). The battery reads on a power source connected to the housing. The electrical load devices (L1-L4) reads on peripheral devices controlling one or more features of the vehicle assembly. Shaklee et al further discloses a vehicle frame to which a housing may be mounted (see col 2, lines 58-60). The vehicle frame reads on a support structure mounted within the vehicle assembly.

Shaklee et al does not disclose:

A. A housing secured to the support structure.

B. A plurality of modules supported by the housing.

C. A connection port extending from each of the modules for electrically connecting each module to an associated peripheral device.

D. An interface module supported by the housing and having a communication processor to selectively interface with the plurality of modules for routing data to an appropriate module and peripheral device.

E. A data communication cable connected to the interface module and disposed outside the housing for transferring data between the interface module and anyone of a variety of devices within the vehicle assembly.

F. The vehicle assembly characterized by a modular connector supported by the housing and electrically connected to the power source, the modular connector including a plurality of identical slots, the plurality of modules and the interface module being electrically connected to any of the identical slots to transfer data between the modules and to provide electrical power to at least one of the modules, thereby facilitating communication with the peripheral devices and providing electrical power to at least one of the peripheral devices within the vehicle assembly.

Smith et al teaches a modular power supply that includes:

A. A housing that houses a plurality of module power circuits (see Fig. 2)

B. A plurality of module power circuits (24) supported by the housing (see col 3, lines 65-66).

C. Each modular power circuit has an output section X1, X2, X3 (see col 14, lines 19-23). This reads on a connection port extending from each of the modules.

D. A microprocessor control module (26) that controls and controls and communicates with each power module col 4, lines 1-3).

E. A communication interface (29) enabling communication to other standardized data communication or controlled devices (see col 4, lines 3-8).

F. A backplane area that supplies power and data signals to the power modules, supported by the housing and connected to the power supply ((col 7, lines 11-15). The backplane area includes a plurality of identical slots to transfer power and data signals to the modules, thereby facilitating communication with the peripheral devices within the vehicle.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the electric power distribution system of Shaklee to include a modular power supply, with a housing, a plurality of modular power circuits, a microprocessor control module, a data communication interface, and a power line conditioner, as taught by Smith. The motivation would have been to provide a power supply in a vehicle employing modular units which may each be removed and replaced, and further provided with an interlock system which provides high power being present

in the open areas of such a modular system when any individual unit is removed (see col 1 line 65 – col 2 line 2).

Regarding claim 2, Smith et al teaches that the PLC (20) provides power to the microprocessor control module (26). The power line is shown extending from the back of (24) to the front of (20) (See Fig. 2).

Regarding claims 3,30,42, Smith et al teaches that the PLC (20) provides power to a plurality of power modules (see col 3, lines 65-66), which reads on at least two modules receiving power.

Regarding claims 4, 20, 31,43, Smith et al teaches an output coming from the circuit TD (see Fig. 5) which reads on a power distributor.

Regarding claims 5-10, 32, 44, Smith et al teaches an adjustable limit to limit the output current of each power supply module (col 4, lines 9-33). It is well known in the art to adjust the limit of the current draw by on a system by system basis in order to satisfy the different engineering design parameters.

Regarding claims 11,12,33,45, Smith et al teaches a SOURCE switch (54) that allows the output of the module (30), module (32), and module (38) (see col 4, lines 38-41). The SOURCE switch reads on a switch for controlling transfer of power to an associated peripheral device.

Regarding claim 13, Smith et al teaches a SOURCE switch (54) and a BEAM switch (56) that controls for controlling a plurality of peripheral devices (col 4, lines 38-46).

Regarding claim 14, 34, 46, Smith et al teaches that the power module has an analog section that includes circuitry for sensing temperature, and fault detection circuitry (CS) (see col 13, lines 14-17). This reads on a sensing receiver for receiving electrical signals from an associated peripheral device.

Regarding claim 17, 37, 49 Smith et al teaches a circuit breaker (CB1) and fuses F1 and F2 for limiting a maximum power level for the back plane (col 7, lines 41-69).

Regarding claim 18 and 19, Smith et al teaches a circuit breaker (CB1) and fuses F1 and F2 for limiting a maximum power level for the back plane (col 7, lines 41-69). Selecting any particular power limit, such as 100 amps or 150 amps, is engineering based on design limits.

Regarding claim 21, Smith et al teaches a circuit breaker (CB1) and fuses F1 and F2 for limiting a maximum power level for the back plane (col 7, lines 41-69). It is good engineering design practice to select the appropriate fuse for each peripheral device, based upon it's particular power requirements.

Regarding claim 23, Smith et al teaches a circuit breaker (CB1) and fuses F1 and F2 for limiting a maximum power level for the back plane (col 7, lines 41-69). Selecting any particular power limit, 30 amps, is engineering based on design limits.

3. Claims 15, 35, 47 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Shaklee et al (3,952,209), Smith et al (4,652,769), and Stoll et al (6,169,338).

Shaklee et al and Smith et al disclose a vehicle assembly comprising a plurality of power modules with a modular connector for connecting the power modules, for providing power to peripheral devices, as discussed in claim 1 above.

Shaklee and Smith do not disclose that the at least one of the plurality of modules includes a pressure receiver for receiving pressure sensing signals from an associated peripheral module.

Stoll et al teaches a compressed air servicing unit, which possesses a plurality of modules, such as pressure controllers, attached together in module housings, one of the modules being designed in the form of a monitoring unit for the other modules and being electrically connected with the same (see Abstract). Stoll et al further teaches a monitoring module (10) that is connected to a central unit (40). The central unit (40) is

connected to a pressure sensor (58) (see Fig. 4, and see col 6, lines 24-53). The pressure sensor (58) reads on the pressure receiver for receiving pressure sensing signals. The monitoring module (10) reads on one of the plurality of modules including a pressure sensing receiver.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the power control apparatus of Shaklee and Smith to include a module with a pressure sensing receiver for receiving pressure sensing signals. The motivation would have been to provide a means for sensing the oil pressure in a vehicle in order to control the engine characteristics during a driving state of the vehicle.

4. Claims 16, 36, 48 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Shaklee et al (3,952,209), Smith et al (4,652,769), and Gluskoter et al (5,656,869).

Shaklee et al and Smith et al disclose a vehicle assembly comprising a plurality of power modules with a modular connector for connecting the power modules, for providing power to peripheral devices, as discussed in claim 1 above.

Shaklee and Smith do not disclose that the at least one of the plurality of modules includes a secondary connector electrically connected to the power source for providing an additional power supply to an associated peripheral device.

Gluskoter et al teaches a power supply system that includes a fault tolerant power supply for one server (402) and a second fault tolerant power supply for a second server (422). Each of the servers has a current share board (410,430). Each current

share board has a second output connector (415,435) for providing a second source of power to an electronic device in the event that one of the supplies undergoes a failure (see Abstract, col 6, lines 26-42). The current share board reads on a power module.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the power control apparatus of Shaklee and Smith to include a secondary connector connected to the power source for providing additional power to an associated peripheral device, as taught by Gluskoter. The motivation would have been to provide additional power to a peripheral device in the event that the output power of one connector is insufficient to meet the power requirements of the device.

5. Claims 22, 38, 50 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Shaklee et al (3,952,209), Smith et al (4,652,769), and Hemena et al (6,157,555).

Shaklee et al and Smith et al disclose a vehicle assembly comprising a power control apparatus with power distributors for an associated module for transferring electrical power from the modular connector to an associated peripheral device, as discussed in claim 20 above. Shaklee and Smith do not disclose that the combination of draws by a combination of power distributors of the modules does not exceed a maximum power level.

Hemena et al teaches a system and method for regulating the total power delivered from a plurality of parallel power supplies (see col 2, lines 10-14), so that the total available output power never exceeds a maximum allowable limit (see col 1, lines

13-15). Hemena et al further teaches an over current protection circuit for adjusting the current limit for each of the plurality of parallel power supplies within a power supply system in response to dynamic variations in the total supply current capacity of the N+1 power supply system (see col 6, lines 32-37).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the power control apparatus of Shaklee and Smith to include a system and method for regulating the total power delivered from a plurality of parallel power supplies, as taught by Hemena et al. The motivation would have been to protect a peripheral device from the dynamic variations in output power of the source.

6. Claims 24, 39, 51 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Shaklee et al (3,952,209), Smith et al (4,652,769), and Sobhani et al (4,877,972).

Shaklee et al and Smith et al disclose a vehicle assembly comprising a plurality of power modules plugged into identical slots of a modular connector, to provide power to peripheral device, as discussed in claim 1 above. Shaklee and Smith do not disclose that at least one of the plurality of modules is connected to two or more slots to exponentially increase the available electrical power input to an associated module, thereby varying an electrical power output to an associated peripheral device which is dependent upon a particular electrical power requirement of the peripheral device.

Sobhani et al teaches a modular power supply system in which a plurality of power supply modules are connected in parallel to a load to contribute equal currents (see Abstract). Sobhani et al teaches an embodiment in which the power supply comprises three power supply modules to provide a total current I equal to the combined output currents $I_1 + I_2 + I_3$ of power supply modules 38, 40, and 42 (see col 4, lines 16-21).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the power control apparatus of Shaklee and Smith to include a plurality of power supply modules connected in parallel to a load to provide a total current which is equal to the sum of the currents from each supply, as taught by Sobhani et al. The motivation would have been to supply current from a plurality of power supply modules instead of from a single source, particularly if the total load current is relatively high, in order to be able to meet the power requirements of the load (see Sobhani et al, col 1, lines 15-20).

7. Claim 25 is rejected under 35 U.S.C. 103 (a) as being unpatentable over Shaklee et al (3,952,209), Smith et al (4,652,769), and Siedel (6,427,167)

Shaklee et al and Smith et al disclose a vehicle assembly comprising a plurality of power modules with a data communication cable connected to the interface module for transferring data between the interface module and anyone of a variety of devices in the vehicle assembly, as discussed in claim 1 above. Shaklee and Smith do not

disclose that the data communication cable includes a power supply for providing a maximum of one amp of power to a connected peripheral device.

Siedel teaches a method for identifying and initializing devices that are connected to a communication system for data exchange with each other and a data processing means (see col 1, lines 9-12). Siedel further teaches a microcontroller (10) that is arranged on a PC plug card (9) that is connected to a can-bus (8) (see col 4, lines 49-51). The micro-controller serves for identifying and initializing devices connected to the canbus (8) and for controlling the data exchange between the devices and the microcontroller (see col 4, lines 51-55). The microcontroller reads on the processor, the PC plug card reads on the interface module, and the canbus reads on the data communication cable that includes a power supply for providing power. The maximum power limit of one amp that is provided by the power supply of the canbus is an engineering design choice.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the power control apparatus of Shaklee and Smith to include a can-bus connected between the interface module and the peripheral devices, as taught by Siedel. The motivation would have been to utilize the speed and thermal properties of the can-bus to provide a data interface between the interface module and peripheral devices that is capable of high speed transfers and can function in harsh environments.

8. Claim 26 is rejected under 35 U.S.C. 103 (a) as being unpatentable over Shaklee et al, Smith et al, and Stanford (5,675,480).

Shaklee et al and Smith et al disclose a vehicle assembly comprising a plurality of power modules, connected together by a modular connector for powering a plurality of peripheral devices controlling one or more features of the vehicle assembly, the modular connector being a back plane, as discussed in claim 1 above. Shaklee and Smith do not disclose that back plane is defined as a circuit board.

Stanford teaches a modular power supply system in which the supply modules are plugged into a backplane circuit board (65) having connectors (67) (see col 6, lines 32-35).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the back plane connecting the plurality of power modules of Shaklee and Smith to include a backplane circuit board for connecting the modules, as taught by Stanford. The motivation would have been to use a circuit board for the back plane because of the advantage that it maximizes the space within the housing, which typically has strict depth requirements.

9. Claim 27 is rejected under 35 U.S.C. 103 (a) as being unpatentable over Shaklee et al, Smith et al, and Pohjola (6,469,404).

Shaklee et al and Smith et al disclose a vehicle assembly comprising a plurality of power modules, connected together by a modular connector , to provide power to a plurality of peripheral devices controlling one or more features of the vehicle assembly, as discussed in claim 1 above. Shaklee and Smith do not disclose that the modular connector is a cable type connector.

Pohjola teaches a current distribution system with a central unit which is divided structurally into discrete junction modules (2) (see Abstract). The discrete junction modules reads on the power modules. The junction modules (2) are connected together by a cable type connector (12) (see Fig 6).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the modular connector connecting the plurality of power modules of Shaklee and Smith to include a cable type connector, as taught by Pohjola. The motivation would have been to utilize the flexibility of the cable-type connector to be able to move the modules to have the modules closer to the load.

10. Claims 28, 40, 52 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Shaklee et al (3,952,209), Smith et al (4,652,769), and Jacobs (6,483,200).

Shaklee et al and Smith et al disclose a vehicle assembly comprising a housing with a plurality of power modules, for providing power to a plurality of peripheral devices controlling one or more features of the vehicle assembly, as discussed in claim 1 above. Shaklee and Smith do not disclose that the vehicle assembly includes a second housing

having a second plurality of modules, a second power source, and a second modular connector with a second housing being connected to the first housing through the data communication cable.

Jacobs teaches a vehicle assembly for a truck tractor having a truck tractor with a standard cab that includes a sleeper compartment behind the cab. The cab (1) contains a first housing (4) for a plurality of power modules and the sleeper (30) contains a second housing (4) for a plurality of power modules (see Fig. 1). The first housing (4) and the second housing (4) are connected together through connectors (5) and (6) of the first and second housings (see Fig. 1). The connectors reads on a data communication cable.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the power control apparatus of Shaklee and Smith to include a first housing for a first set of power modules and a second housing for a second set of power modules, connected to each other by a pair of connectors, as taught by Jacobs. The motivation would have been to provide an efficient means for providing power to not only the devices in the cab of a tractor, but also to a sleeper compartment of a tractor.

11. Claim 53 is rejected under 35 U.S.C. 103 (a) as being unpatentable over Shaklee et al (3,952,209), Smith et al (4,652,769), and Pohjola (6,469,404).

Shaklee et al and Smith et al disclose a vehicle assembly comprising a housing with a plurality of power modules, for providing power to a plurality of peripheral devices, with a connection port connected to each power module, and a data communication cable for transferring data between the interface module and the devices, as discussed in claim 41 above. Shaklee and Smith do not disclose that the vehicle assembly includes a first transmission cable connecting the peripheral devices to the power modules, and a second transmission cable connecting the peripheral devices to the data communication cable.

Pohjola teaches an intelligent control system for current distribution in a vehicle. The system includes intelligent connecting sockets (3) connected in between a junction modules (2) and current consuming actuators (7) (see Fig 1A). The current consuming actuators (7) are connected to the intelligent connecting sockets (3) by a cable (6). The intelligent connecting socket (3) reads on the connection ports, the junction module (2) reads on the power module, and the current consuming actuators (7) reads on the peripheral devices, the cable (6) reads on a data communication cable. It can be seen from Fig. 1A that there is a first transmission cable connected between the junction module (2) and the intelligent connecting socket (3), and a second transmission cable connected between the intelligent connecting socket (3) and the cable (6).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the power control apparatus of Shaklee and Smith to include a first transmission cable for connecting the peripheral devices to the connection ports, and a second transmission cable for connecting the data communication cable to the

peripheral devices, as taught by Pohjola. The motivation would have been to provide a means for the peripheral devices to not only communicate with the interface module through the first transmission cable, but to allow the peripheral devices to directly communicate with other peripheral devices on the data transmission bus without having to go through an interface module.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc L Shin whose telephone number is 571-272-2267. The examiner can normally be reached on M - F 8AM - 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on 571-272-2800 ext 36. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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